CLAIMS

1. In a data-storage system, a method for providing data indicative of the performance of a competing algorithm and an incumbent algorithm, said method comprising:

> evaluating an incumbent-algorithm score indicative of a performance of an incumbent algorithm;
>
> simulating performance of a competing algorithm executing in place of said incumbent algorithm;
>
> on the basis of said simulation, evaluating a competing-algorithm score predictive of a performance of said competing algorithm; and
>
> providing said competing-algorithm score and said incumbent-algorithm score to an output device.

2. The method of claim 1, further comprising providing data indicative of whether said competing algorithm is preferable to said incumbent algorithm.

3. The method of claim 2, wherein providing data comprises monitoring said incumbent-algorithm score and said competing-algorithm score over a selected interval.

4. The method of claim 3, wherein providing data further comprises displaying data indicative of a performance of said incumbent algorithm and said competing algorithm during said selected interval.

5. The method of claim 3, wherein displaying data comprises evaluating a ratio indicative of an extent to which said competing-algorithm score exceeds said incumbent algorithm score during said selected interval.

6. The method of claim 1, wherein simulating performance comprises:

> obtaining meta-data characterizing an input-data stream provided to said incumbent algorithm; and

simulating performance of said competing algorithm were it to operate on an input-data stream characterized by said meta-data.

7. The method of claim **6** wherein obtaining meta-data comprises maintaining statistics descriptive of said input data-stream during a selected interval.

8. The method of claim **1**, wherein evaluating a competing-algorithm score comprises incorporating a penalty into said competing-algorithm score.

9. The method of claim **8**, further comprising selecting said penalty to be indicative of a cost associated with replacing said incumbent algorithm with said competing algorithm.

10. A method for providing data indicative of a performance of a competing algorithm and an incumbent algorithm in a data-storage system, said method comprising:

    statistically characterizing a usage pattern of said data-storage system; and

    on the basis of said statistical characterization, simulating a performance of said competing algorithm were it to execute on said data-storage system in place of said incumbent algorithm.

11. The method of claim **10**, further comprising:

    evaluating actual performance of said incumbent algorithm in response to said usage pattern;

    simulating performance of said competing algorithm in response to said usage pattern; and

    communicating, to an output device, data indicative of a comparison between said actual performance of said incumbent algorithm and said simulated performance of said competing algorithm.

12. The method of claim **10**, wherein statistically characterizing a usage pattern of said data-storage system comprises generating meta-data that characterizes an input data-stream to said data-storage system.

13. The method of claim **11**, further comprising incorporating a cost of replacement into a performance selected from said actual performance of said incumbent algorithm and a simulated performance of said competing algorithm.

14. A method for comparing performances of a plurality of algorithms in performing a task, said method comprising:

simulating execution of a competing algorithm operating on said input stream;

evaluating, on the basis of said simulation, a competing-algorithm performance of said competing algorithm;

evaluating performance of an incumbent-algorithm operating on said input stream;

providing data indicative of a comparison between said incumbent algorithm and said competing algorithm.

15. A system comprising:

a data-condenser configured to receive a data-stream, said data-condenser generating meta-data characterizing said data stream;

a competing-algorithm simulator in communication with said data-condenser, said competing algorithm simulator generating data indicative of a performance attribute of a competing algorithm when said competing algorithm operates on a data-stream characterized by said meta-data; and

a tournament manager configured to provide output data indicative of a comparison between a performance attribute of said competing algorithm and a corresponding performance attribute of an incumbent algorithm.

16. A computer-readable medium having encoded thereon software for providing data indicative of the performance of a competing algorithm and an incumbent algorithm, said software comprising instructions for:

>   evaluating an incumbent-algorithm score indicative of a performance of an incumbent algorithm;

>   simulating performance of a competing algorithm executing in place of said incumbent algorithm;

>   on the basis of said simulation, evaluating a competing-algorithm score predictive of a performance of said competing algorithm; and

>   providing said competing-algorithm score and said incumbent-algorithm score to an output device.

17. The computer-readable medium of claim 16, wherein said software further comprises instructions for providing data indicative of whether said competing algorithm is preferable to said incumbent algorithm.

18. The computer-readable medium of claim 17, wherein said instructions for providing data comprise instructions for monitoring said incumbent-algorithm score and said competing-algorithm score over a selected interval.

19. The computer-readable medium of claim 18, wherein said instructions for providing data further comprise instructions for displaying data indicative of a performance of said incumbent algorithm and said competing algorithm during said selected interval.

20. The computer-readable medium of claim 18, wherein said instructions for displaying data comprise instructions for evaluating a ratio indicative of an extent to which said competing-algorithm score exceeds said incumbent algorithm score during said selected interval.

21. The computer-readable medium of claim 16, wherein said instructions for simulating performance comprise instructions for:

obtaining meta-data characterizing an input-data stream provided to said incumbent algorithm; and

simulating performance of said competing algorithm were it to operate on an input-data stream characterized by said meta-data.

22. The computer-readable medium of claim **21** wherein said instructions for obtaining meta-data comprise instructions for maintaining statistics descriptive of said input data-stream during a selected interval.

23. The computer-readable medium of claim **16**, wherein said instructions for evaluating a competing-algorithm score comprise instructions for incorporating a penalty into said competing-algorithm score.

24. The computer-readable medium of claim **23**, wherein said software further comprises instructions for selecting said penalty to be indicative of a cost associated with replacing said incumbent algorithm with said competing algorithm.

25. A computer-readable medium having encoded thereon software for providing data indicative of a performance of a competing algorithm and an incumbent algorithm in a data-storage system, said software comprising instructions for:

statistically characterizing a usage pattern of said data-storage system; and

on the basis of said statistical characterization, simulating a performance of said competing algorithm were it to execute on said data-storage system in place of said incumbent algorithm.

26. The computer-readable medium of claim **25**, wherein said software further comprises instructions for:

evaluating actual performance of said incumbent algorithm in response to said usage pattern;

simulating performance of said competing algorithm in response to said usage pattern; and

communicating, to an output device, data indicative of a comparison between said actual performance of said incumbent algorithm and said simulated performance of said competing algorithm.

27. The computer-readable medium of claim **25**, wherein said instructions for statistically characterizing a usage pattern of said data-storage system comprise instructions for generating meta-data that characterizes an input data-stream to said data-storage system.

28. The computer-readable medium of claim **26**, wherein said software further comprises instructions for incorporating a cost of replacement into a performance selected from said actual performance of said incumbent algorithm and a simulated performance of said competing algorithm.

29. A computer-readable medium having encoded thereon software for comparing performances of a plurality of algorithms in performing a task, said software comprising instructions for:

> simulating execution of a competing algorithm operating on said input stream;

> evaluating, on the basis of said simulation, a competing-algorithm performance of said competing algorithm;

> evaluating performance of an incumbent-algorithm operating on said input stream;

> providing data indicative of a comparison between said incumbent algorithm and said competing algorithm.